

Oscilloscopes (35:33)

ATTENTION: Do not just passively watch this lecture. Get in lab and actively replicate the exercise using a function generator and oscilloscope.

Differentiate between a DMM and oscilloscope.

Describe the display area of the Tektronix TBS1032B oscilloscope.

Identify the quantities displayed on the vertical and horizontal axes.

Identify the 4 critical areas of an oscilloscope.

Describe the vertical group.

Describe the horizontal group.

Identify elements in the operations group.

Identify how to obtain a 0-5V pulsed DC wave form with 50% duty cycle operating at 1kHz test waveform using only the Tektronix TBS1032B oscilloscope.

Define attenuation. Differentiate between 1X and 10X attenuated input.

Differentiate between the grabber and alligator clip on an oscilloscope probe. Identify special considerations of the reference point.

Predict the display output of an oscilloscope with a vertical sensitivity of 5V/div and a horizontal sensitivity of 1ms/div when displaying the test waveform (50% duty cycle 0-5V pulsed DC operating at 1kHz).

Identify how the test waveform would look at a vertical sensitivity of 2V/div.

Identify how the test waveform would look at a horizontal sensitivity of 250 μ s/div.

Identify how the test waveform would look at a vertical sensitivity of 5mV/div and a horizontal sensitivity of 10ns/div.

Identify the consequences of improperly scaling an oscilloscope.

Identify how the test waveform would look at a vertical sensitivity of 2V/div and a horizontal sensitivity of 10ms/div.

Identify how the test waveform would look at a vertical sensitivity of 5V/div and a horizontal sensitivity of 100 μ s/div.

Identify how the test waveform would look at a vertical sensitivity of 2V/div and a horizontal sensitivity of 250 μ s/div.

Identify the 3 methods of coupling and differentiate one from another.

Identify the method used to change the coupling for a particular channel.

Describe how the test waveform looks with AC coupling.

Identify the consequence of viewing a DC waveform with AC coupling.

Identify the method of disabling and enabling a particular channel on the Tektronix TBS1032B.

Identify the purpose of positioning and the means one uses to position waveforms on the Tektronix TBS1032B.

Identify the purpose of triggering and the means one uses to change triggering on the Tektronix TBS1032B. Identify limitations of triggering events. Identify how an improperly triggered waveform will appear on an oscilloscope.

Identify one method to capture data for irregular waveforms without a defined triggering event.

Identify the consequences of shifting the triggering event horizontally.

Summarize the following qualities of an oscilloscope: display, vertical group, horizontal group, triggering, coupling, attenuation

Identify the consequences of improperly adjusting vertical sensitivity.

Identify the consequences of improperly adjusting vertical position.

Identify the consequences of improperly adjusting horizontal sensitivity.

Identify the consequences of improperly adjusting triggering level and source.

Identify the consequences of improper coupling.

Identify the consequences of improperly attenuating input.

Identify the means of setting up the Tektronix TBS1032B to deal with 10X attenuated input.

Identify the consequences of performing all calculations and setting up the oscilloscope in advance.

Identify automated means of setting up an oscilloscope.